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Every car needs a certain particular type of battery to fit the other electrical equipment the car builder put on it.

Don't go to some one who'll sell you "any old battery"—because he hasn't your particular size and type in stock. Come to the Authorized Willard Service Station where we carry a complete stock, and can sell you the one battery that your car needs.

And remember—Willard Batteries with Threaded Rubber Insulation last longer and need less repairs than any other you can buy—because the insulation lasts as long as the plates, instead of wearing out and making re-insulation necessary before you have had the full service you should get.

Ozburn-Abston Co.

Distributors—610 Monroe Ave.
(At Bridge).

We test, repair and recharge storage batteries and always carry a full supply of battery parts, new batteries and rental batteries for all makes of cars.



Hints for the Motorist

By Albert L. Clough Editor Motor Service, Review of Reviews.

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WATCHING THE AMMETER.

The ammeter or the current-director as the case may be, placed upon the dashboard for a purpose. It is the silent guardian of the electric system and is worthy of more of the operator's attention than it usually receives. While it gives no information as to the battery's state of charge, it tells whether it is being subjected to a drain or is being afforded a recuperating current. The habit should be formed of giving the ammeter a glance every few minutes, while a car is in operation, and anything abnormal in its reading should be the signal for an investigation. Every car has a certain engine speed, above which current should constantly be passing to the battery and any failure of the ammeter to then show a "charging" indication, when the lights are not burning, denotes that something is wrong. When all the lights are on, they are usually consuming current as fast as it is being produced by the generator and thus at speeds of 15 miles per hour and over, the ammeter may indicate little if any charging or discharge current. It is quite likely to stand at zero or in a neutral position but if a distinct indication of "discharge" is given under these circumstances, it usually indicates trouble, for the normal condition of operation, consistent with a sustained battery, generally implies a charging current equal to the lighting current at all ordinary driving speeds. When the engine is stopped and all lights are on, the ammeter normally records a certain number of amperes of discharge current and the operator should be familiar with this amount, for any indication in excess of it denotes a leakage of current somewhere, possibly a partial short-circuit in the wiring or the failure to turn off the ignition switch.

BROKEN BEARINGS LET WHEEL COME OFF.



X. Y. Z. asks: What could cause a front wheel (run only about 150 miles)

to come off on the road? The race and the cone both were broken, but the nut and cotter pin still remained in place. Could faulty adjustment have caused this to happen?

Answer: In case the balls failed and the cup and cone, on the outside of the wheel became so badly broken that their pieces would clear the nut, there would be nothing to hold the wheel on in most forms of this construction. It is possible that faulty adjustment may have been partly responsible for this accident. If, for instance, the bearing had been very loosely adjusted, the bearing parts would have been subjected to heavy shocks, as the wheel wobbled from side to side and breakage would have been quite likely. Moreover, in the case of excessively tight adjustment, the balls might have given away and their fragments might have wedged and broken the cup and cone. It is more likely that the fault lay in the cup and cone being too hard and brittle or being cracked initially in the heat treatment. Exceptionally hard shocks such as caused by running a tire deflated, often cause bearing failure under such conditions.

TESTING BEARINGS FOR LOOSENESS.

S. S. R. asks: How can I tell if the main bearings of my engine need taking up? I tried to shake the crankshaft in them, but they seem very tight, yet there is a heavy knock when pulling hard on hills.



Answer: Try the following procedure: Draw out the timing oil and remove the oil pan. Remove the caps from two of the three bearings. Place blocking or a jack nearly under the bearing that still has the cap in place and in such a position that you can obtain a leverage between the blocking and the crankshaft at this bearing. Pry up on the crankshaft at this point and see if it moves in the bearing or all expenses out from the underside of the bearing, noticeably. If so, there is looseness. Then tighten the treatment upon the other two, keeping the caps off the ones which are not being tested and the cap on the one that is.

ZIMMERMAN JOINS SUPREME MOTORS CO.

Albert H. Zimmerman, one of the best-known motor executives in the country, who for 14 years has directed the destinies of the Continental Motor company, of Detroit, has severed his connection with that corporation and has associated himself with the new \$2,000,000 Supreme Motors company, of Warren, O., in the capacity of president, treasurer and general manager.

The announcement of President A. W. Green, of Supreme Motors, of the acquisition of Mr. Zimmerman makes automobile history and is expected to create an unusual stir in the motor world because of Mr. Zimmerman's long and successful connection with the Continental and wide acquaintance with the trade.

Mr. Green announced also that Mr. Zimmerman has purchased a large interest in the new Supreme Motors company. The Supreme Motors plant is equipped to the last word with modern machinery and, under Mr. Zimmerman's management, will have a capacity of 300 motors a day to serve the pleasure car and truck trade.

The announcement of Mr. Zimmerman's connection with Supreme Motors is the last link in the organization chain and it gives to the new company an executive staff that President Green believes stands without a peer.

Mr. Zimmerman's career in the motor trade is one of the most successful of the modern business world. He is only 28 years old. Yet for years he has headed the largest motor business in the world, that of the Continental.

Mr. Zimmerman's connection with the Continental dates back to 14 years ago, when, at the very inception of the big motor enterprise, he began as auditor and factory accountant. The Continental at that time, had had an invested capital of only \$10,000 and its annual output was less than 300 motors a year. Mr. Zimmerman occupied executive positions until 1915 when he was elected secretary-treasurer, a member of the board of directors and of the executive committee of the big corporation.

In fact, for several years before he retired from the Continental in December of 1918 to take a much-needed rest, he had been the acknowledged executive head of the great business which had then reached the enormous output

of 160,000 motors a year and employed 6,000 men.

"The acquisition of Mr. Zimmerman I regard as the most important step in the future of Supreme Motors that we have taken," President Green said. "He is an acknowledged leader in the motor industry and an expert on every line and is known as an expert on the high finance of the motor industry."

"We feel that the company has been most fortunate in inducing Mr. Zimmerman not only to come to the company in the capacity of vice-president, treasurer and general manager, but to invest heavily in it."

"The connection assumes Supreme Motors a great product expert as well as an able executive, a man who has been in the business from the embryonic stage of the motor industry to the present advanced position."

HARDING OPPOSED TO RUNNING FOR PRESIDENT

COLUMBUS, O., Nov. 1.—United States Senator Warren G. Harding last night advised the Republican state advisory committee that he would not be a candidate for re-election to the senate rather than a candidate for nomination for the presidency. His nomination was presented in a letter in answer to a question about his candidacy did not state, however, that he would not be a candidate for the presidency.

HOPES FOR END OF BIG DOCK STRIKE DASHED

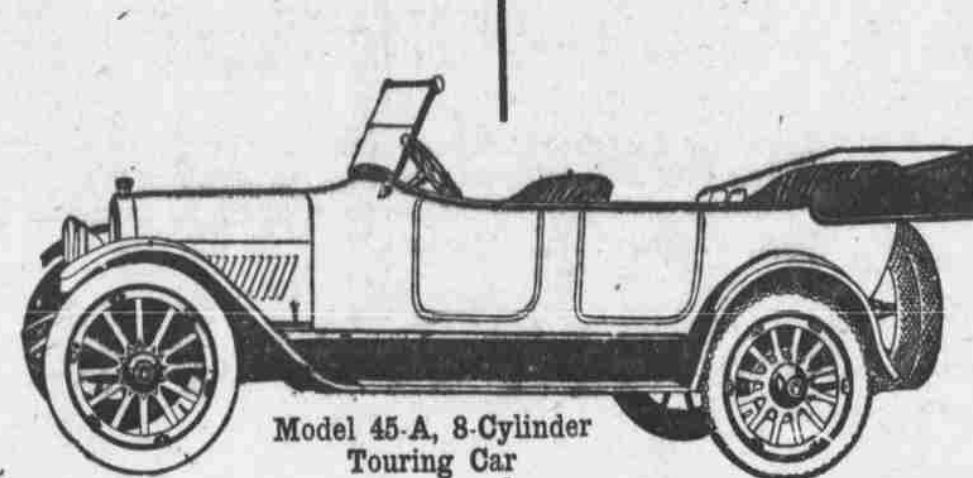
NEW YORK, Nov. 1.—Hopes that the end of the longshoremen's strike was at last in sight were dashed today when the union voted to return to work of an important section of the men failed to materialize. With the exception of men on two ships, the Chelsea piers district of the New York waterfront was idle. At a meeting yesterday afternoon the faction of the strikers it was voted to return this morning, while at the same time the other faction voted to continue the strike.

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Stratton Auto Co.

157 MONROE AVE.

DISTRIBUTORS

MEMPHIS, TENN.

Transcontinental Record In Stolen Car Instructive

If you have ideas of borrowing some stranger's limousine and driving it three thousand miles, don't get enticed over the accomplishment and comment on the performance of the car. Also don't let your enthusiasm who borrow cars and leave no address, who should avoid Los Angeles.

When Louis Benski saw a beautiful new Liberty brougham standing in front of a prominent theater in Newark, N. J., one night several weeks ago, he immediately had visions of a taxi stand in California. He simply couldn't resist what he considered an interesting test trip to observe how a town car would take the punishment of the Western deserts, the mountain roads and steep passes of the Rockies.

Louis later discovered that the accomplishment wasn't worth the doing if you couldn't talk about it afterward. He was so enthusiastic over his new possession when he landed in Los Angeles a few days ago, he just couldn't wait to tell C. K. McKelvey, the Los Angeles Liberty distributor, how he had made the transcontinental voyage with only two minor accidents—a puncture and a fractured spring leaf.

While waiting for the spring to be repaired McKelvey intended to make a record of performance of the car while another member of his organization searched the Liberty stolen car records. Meanwhile the Newark owner had solicited the co-operation of Mr. Ray Brundage of the Wallace Motor company. The rest was easy. Mr. Brundage sent out the warning to the Detroit factory who in turn relayed the loss and description to all sections of the country by a system which the Liberty company has originated.

Louis tells the police now, that he did not know a great deal about the laws of New Jersey which prohibit the removal of another man's car to other states. He also indicated that the next time he takes an endurance run, even if he goes clear around the world without even a puncture, he'll never be so far as testimonials are concerned Louis is through. However, he

MARMON SERVICE MEN TO HOLD CONVENTION

More than 200 service representatives of Marmon distributors from all over the country will attend a Marmon service convention that begins Oct. 30 and will run for three weeks. There will be three sections and a week's course of study for each section at the North, West and Marmon company factory. The new body and final assembly plants new under construction will be inspected and the new Marmon machine shop located in what was the company's Liberty motor factory during the war. After a thorough study of the modern methods employed in manufacturing the Marmon 24 the special service course is being conducted in a portion of the factory which has been set aside and equipped as a modern service station. Here the cars and motors are torn down and assembled by Marmon experts who demonstrate just how all of the details should be managed. This exposition of the technique of the Marmon service men who are thus put in possession of the most expeditious manner of accomplishing the right sort of service. Such knowledge will be reflected in improved service to Marmon owners in all parts of the country.

Aside from the intensive study of the modern and correct service methods and appliances and tools, a special course in driving and in the care of the car in the hands of owners is being given by the Marmon company. The department of experiment and research. Besides the instruction a course of lectures is being delivered to the convention by officials of the Marmon organization who lay special stress on the policy of the company, its ideal to build cars that will extend the greatest amount of satisfactory service to all owners, and the necessity of all service men keeping this ideal in mind.

Read News Scimitar Wants.

YOU CAN BUY THE WORLD'S BEST HERE IN MEMPHIS

The following Automobiles, Trucks and Tractors are sold by members of the Memphis Automobile Dealers' Association—purchasers are thus assured of fair treatment. ALL PRICES QUOTED F. O. B. FACTORY.

CATERPILLAR TRACTORS

Holt Caterpillar Tractors played a big part in winning the war. MURPHY MACHINERY & EQUIPMENT CO. 482-484 Union Ave. Phone Main 1710, Main 3440.

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DODGE BROS.

These prices are F. O. B. factory. SCHLECHT MOTOR SALES CO. Hemlock 135

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MURPHY MACHINERY & EQUIPMENT CO. 482-484 Union Ave. Phone Main 1710, Main 3440.

Lexington

CARO-HOLMES CO., Inc. Hemlock 6080

Nash

Erwin-Hicks Motor Car Co., 754-60 Union. Main 2896

Premier

MURPHY MACHINERY & EQUIPMENT CO. 482-484 Union Ave. Phone Main 1710, Main 3440.

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LOCKWOOD AUTOMOBILE CO., MAIN 470.

Republic

Richardson Motor Sales Co., 278-280 Monroe. Main 930.

Scripps-Booth

Erwin-Hicks Motor Car Co., 754-60 Union. Main 2896

Stutz

BURKE-COURT MOTOR CO. Main 3190

White

THE WHITE COMPANY, Factory Branch, Memphis, Tenn. Monroe and Pauline St.

AUTO SCHOOL VALUED BY BUICK COMPANY

"Practically everybody today is interested in motor cars, but nowhere is the interest greater than among the rising generation—a fact that speaks well for the future development of the motor car and its application to everyday life," says Fritz Siron, general sales manager of the Buick Motor company, of Flint, Mich. "Small boys can name the various makes of cars as they pass on the street, a surprising number of them can drive a car with considerable credit, and nearly all of them are keen to explore the mysteries of the forces and principles that 'make the wheels go round'."

The interest in motor cars displayed by their elders. And as a result we find automobile schools for students of all ages in all sections of the country. Some of them are included in certain courses in high schools and colleges, and others are privately operated enterprises.

Just as there are good and poor motor cars, so there are good and poor automobile schools. But for the most part they are good, and the instruction in the good schools follows logically about the same steps as are followed in a motor car factory where the cars are built rather than assembled from purchased parts.

In the Buick factory we build our own units—motors, radiators, axles and so on. And before the car is finished and ready to run, every operation has been performed on every part and checked to see that it is right before the next step is taken. So with good automobile school, instead of starting the course by teaching the student how to drive, that is the last thing covered, if indeed it is covered at all.

For the main thing is to get the principles thoroughly clear to the students, and to make them understand why certain things happen, rather than to demonstrate that they do happen. Anybody can learn to drive in a few hours, because it is a comparatively simple thing to do. But to get an accurate knowledge of motor car design and construction that will enable the student to think and talk correctly about motor cars, and to know good or bad design when he sees it, the work must be constructive and thorough, and it must start at the beginning.

The Buick Motor company is heartily in favor of these automobile schools because they will most certainly have the effect of making every class of

GOOD TIRES AID USED CAR SALES

Just as a new hat, clean collar and polished shoes will make a tramp appear dressed up, so the saying goes, a new set of tires will work a remarkable change both in the appearance and easy selling qualities of second-hand automobiles, according to one of Akron's leading dealers in used cars.

"A hundred dollars worth of new tires will enhance the selling value of the used car at least \$200," declared the dealer. "While quality of the car itself is obviously the main point of interest in connection with the purchase of a used automobile, unsatisfactory appearance will frequently overshadow the merits of the motor."

For example, that car standing there in a yard, a week ago looking like it had been driven 30,000 or 40,000 miles, said the dealer, pointing to a clean-looking and regular standard make of car on which were four new tires. As a matter of fact it had only run about 8,000 miles, but it had been badly misused. There were many scratches on the body, the fenders were banged up and the tires looked a fright.

"It took the best part of a couple of days to fix the body, straighten out the fenders, etc. After which I had a good-looking car, even though it was a second-hand car, and I put on the Miller tires. In my mind, it is an exceptionally good selling point."

However, taking it all in all, a new set of tires and a little cleaning up of the car itself will accomplish the same result for the old car as the new car. A shave and a haircut and a new pair of shoes will do for the man with an old suit of clothes.

WINTER IS APPROACHING. You don't want your machine laid up with burst radiator because of freezing. Store it with us in the only steam-heated garage in the city.

Memphis Service Garage

17 South Cleveland Telephone H. 572

GATES HALF TIRES

REGISTERED U. S. PAT. OFF. Cost only 1/2 AS MUCH

Gates' guarantee has recently been raised to 3,000 miles, but the cost still remains "only half as much." Greater mileage, oversize, puncture-proof—the quality must be there.

YOU CAN Depend On 816 Road Service and GOODYEAR TIRES

"Next Time You Have a Blowout Call 816."

Get The Best Auto Service

Don't hesitate to call us when you have a breakdown. We'll pull you in and put your car or truck in serviceable shape over night. Our unexcelled equipment and expert mechanics enable us to keep cost down to a minimum.

Winter is approaching. You don't want your machine laid up with burst radiator because of freezing. Store it with us in the only steam-heated garage in the city.

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